High Performance Computing Software

JPL Internal Seminar Series

Limits of Parallel and Distributed Computing

by

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After initial euphoria, it is becoming clear that parallel and distributed computer systems are definitely no silver bullet. Whereas "hardware" starts to become relatively well understood, this is not the case with "software". The problem of bringing "software" up to a level that is equivalent to "traditional" software is just only starting to be addressed. In the presentation I will show that a careful definition of the informal concept of "granularity" allows us to separate "machine" from "software" concerns. A consequence of this definition is that we can show that for certain classes of problems, "hybrid" machines are the only economically feasible solution. A typical example is a network of general purpose CPUs, each assisted by one or more FPGAs. In these structures, the distinction of "hardware" from "software" becomes hard and should be very well thought about! Examples are taken from the field of simulation of telecommunications networks.

For questions, please contact Dan Katz at 4-7359.